

HR-309 An Investigation of Emulsion Stabilized Limestone Screenings

Key Words: Limestone Screenings, Asphalt emulsion base stabilization, Anionic/Cationic, Zeta potential

ABSTRACT

A significant amount of waste limestone screenings is produced during aggregate production. This waste material cannot be used in highway construction because it does not meet current highway specifications. The purpose of this research was to determine if a waste limestone screenings/emulsion mix could be used to construct a base capable of supporting local traffic.

A 1.27 mile (2.04 km) section of roadway in Linn County was selected for this research. The road was divided into seven sections. Six of the sections were used to test 4 in. (100 mm) and 6 in. (150 mm) compacted base thicknesses containing 2.5%, 3.5% and 4.5% residual asphalt contents. The seventh section was a control section containing untreated waste limestone screenings.

This research on emulsion stabilized limestone screenings support the following conclusions:

1. A low maintenance roadway can be produced using a seat coat surface on 6 inches (150 M) of stabilized limestone screenings with 4.5% asphalt cement.
2. A 6 inch (150 mm) emulsion stabilized base with less than 3.5% asphalt cement does not produce a satisfactory low cost maintenance roadway.
3. A 4 inch (100 mm) emulsion stabilized base does not produce a satisfactory low cost maintenance roadway.
4. A 2 inch (50 mm) asphalt concrete surface would be necessary on many roads to provide a low maintenance roadway using emulsion stabilized limestone screenings.

